

THE LAKE ST. JEAN LOWLAND,
PROVINCE OF QUEBEC

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INTRODUCTION

THE earliest geographical knowledge concerning the area bordering Lake St. Jean emanates from Père Jean de Quen, the first white man to view the great lake which is the source of the river Saguenay (Map 8).

Père de Quen, with two savages as guides and canoemen, left the little Indian village of Tadoussac at the mouth of the Saguenay in August, 1647, and began the westward journey up the rock-walled river. The small party left the great river at the present site of Chicoutimi to follow the course of the river of that name up to Lake Kenogami (Map 8). They paddled westward on this lake to its end, where the canoe was carried overland to the small body of water called Kenogamichiche (Lake Vert; see Map 9). Without encountering further obstacles they continued across this lake and down a tributary of the Belle River to its mouth on the southeastern shore of Lake St. Jean, reaching there on the second day of September, 1647.¹

Several other men, chiefly Jesuits, followed closely on the heels of Père de Quen, among them Père Gabriel Drueillettes and Père Claude Dablon, in the summer of 1671.² Père Charles Albanel visited the area on his famous journey to Hudson Bay in 1671.³

From descriptions left by these intrepid men, as well as by many

* This paper is a curtailed form of an unpublished article of the same title. The field work on the area was done in the summers of 1931 and 1932. The use of "St. Jean" in preference to "St. John" is followed in the attempt to preserve the original name and to avoid the incongruity involved in employing the English form in juxtaposition with the primarily French nomenclature of the area. Other reasons, for which there is no space here, also enter into this usage.

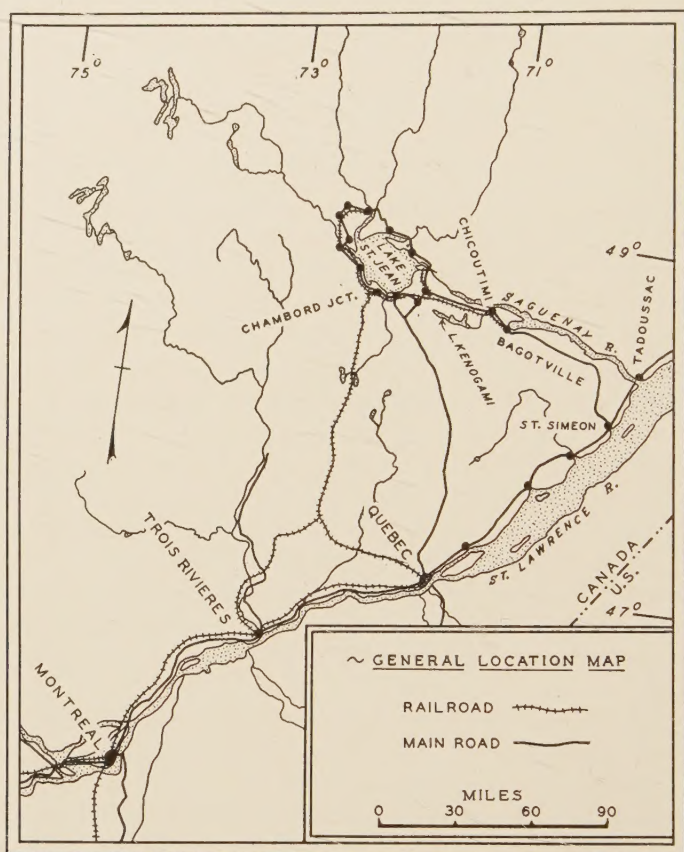
¹ Thwaites, R. G., editor, *Jesuit Relations and Allied Documents* (Burrows Bros. Co., Cleveland, 1898), 31: 250, 252.

² *Ibid.*, 46: 261.

³ *Ibid.*, 56: 155.

more,⁴ it is possible to reconstruct, in a general way, the landscape expression of the region at the time of the advent of the white man.

The focal point of the picture is occupied by a large, elliptical lake bordered by a relatively level plain, which in turn is surrounded by

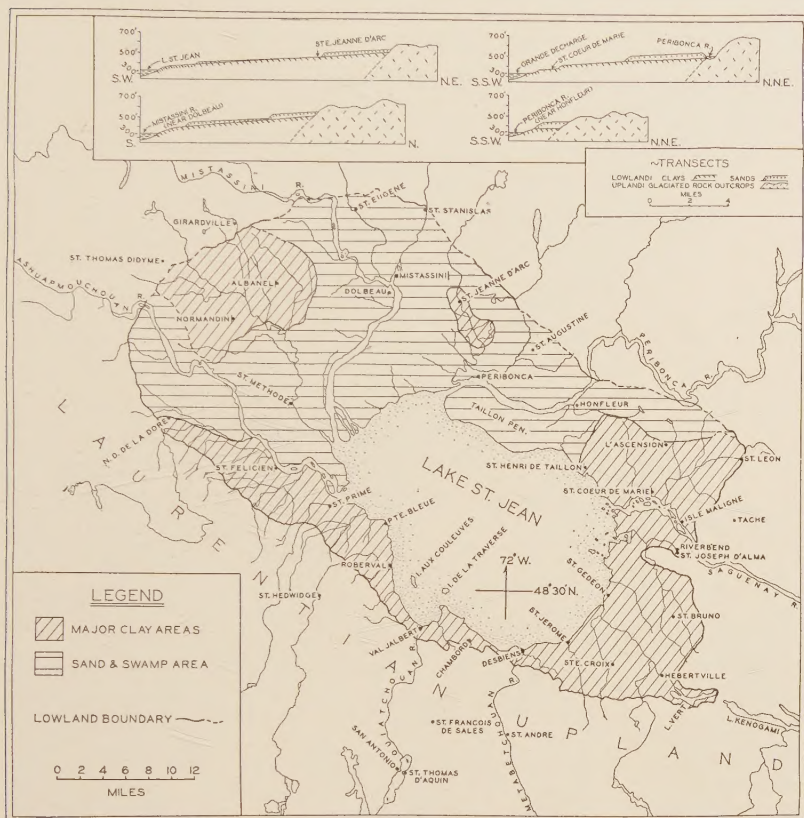


MAP 8. Lake St. Jean, the Saguenay, and the St. Lawrence

hilly uplands of solid, glaciated rock. From the highland many large rivers descend from nearly all directions to replenish the great natural reservoir. The lake receiving these copious waters has but one outlet, a double one, through which the waters rush and tumble

⁴ Thwaites, *op. cit.*, 68: 41. See also de Rochemonteix, Le P. Camille, *Les Jésuites et la Nouvelle-France au XVII^e siècle* (Letouzey et Ané, Paris, 1896), 3: 413.

as they race eastward in their gorges to form, at their junction, the river Saguenay (Map 10). An extensive forest, dominantly coniferous, cloaked the lowland and spread up into the highland, where



MAP 9. Land divisions of the St. Jean Lowland. Based on field work, correspondence with members of the Geological Survey of Canada, Royal Canadian Air Force photographs, and reference maps 1 and 10 (see p. 341). Transects (insets) adapted from A. Graham, Land Classification North of St. John (unpublished), obtained through the courtesy of the author

its mantle was broken by barren, glacially smoothed hills. In the woodland lived many animals, such as the moose, bear, otter, beaver, and porcupine. The waters of the lake and streams harbored an abundant fish life, made up of such species as trout, salmon, perch,

pike, and carp. In this primitive setting moved the Indians, using the streams as their highways, the lowland shore at certain spots as summer meeting places, and the immense spaces of the upland for the winter activities of hunting and trapping. Among the Indians a



MAP 10. Based on reference maps 1-3 and 5 (see p. 341)

few Jesuit priests pursued their dangerous and difficult work of evangelization, and already the buyers of pelts came to the summer trading places to leave their guns, blankets, and trinkets in exchange for the prime furs garnered the preceding winter.

A broad view of the area at the present time gives a picture which, while not totally different, shows considerable metamorphosis. This change has been wrought chiefly during the last eighty years by

Lake St. Jean, Quebec

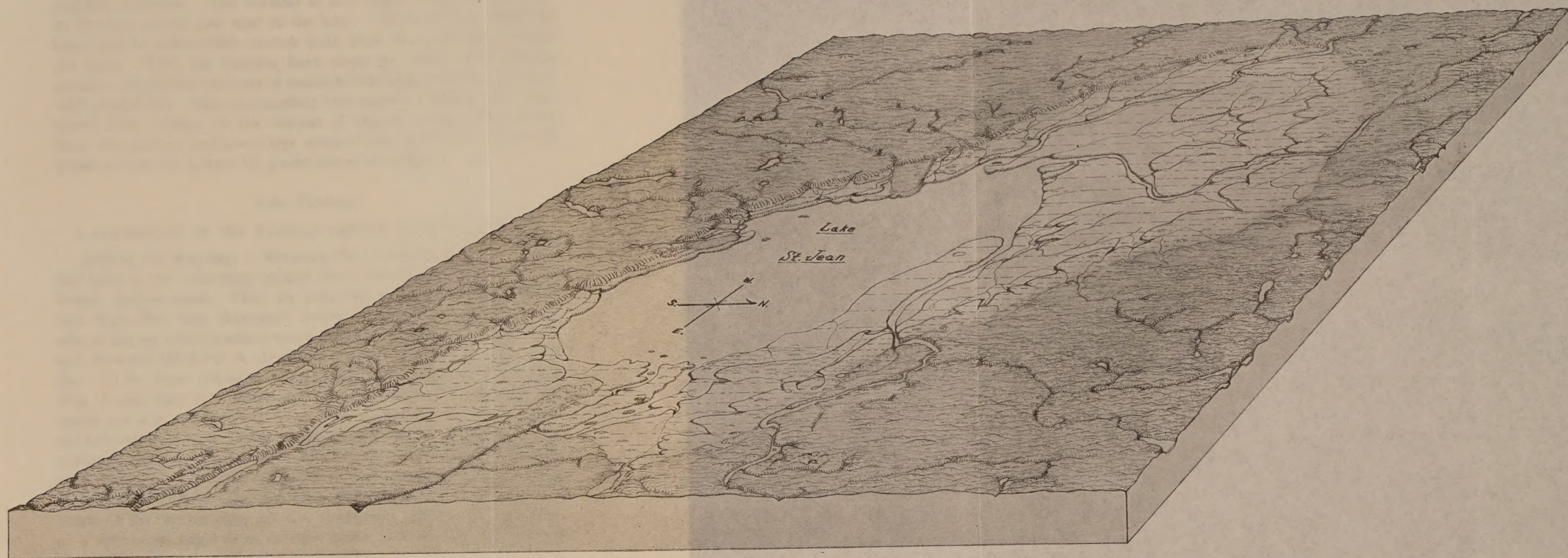


FIG. 5. Generalized block diagram showing Lake St. Jean, the terraced plain, and the encircling upland. Front of block extends north-south; view is westerly

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the French-Canadian agriculturist with his land-clearing and crop-planting activities. The lowland is now largely cleared, especially to the east, south, and west of the lake. This land is occupied by long, narrow fields which stretch back from the roads that thread the plain. With the clearing have come the crops, the domestic animals, the fences, the lines of roadside buildings, and the retreat of wild animal life. But, surrounding this region of change, the dark forest, little broken by the thrusts of human beings, looks down from the plateau and over large areas to the north of the lake still disputes with the farmer for possession of the plain.

THE TERRAIN

A DESCRIPTION OF THE NATURAL PORTION OF THE LANDSCAPE

Surface and drainage. — Between the low shores of the lake and the base of the encircling upland there are terraces which rise in broad, shallow steps. They are composed of unconsolidated sands and clays that were deposited, during Champlainian times, in an arm of the sea which reached westward through the Saguenay trough and drowned the basin in the lowest portion of which the lake now lies. It is these depositional features that constitute the plain (Fig. 5 and Map 9).⁵ There are three terrace levels, although the upper one is in many places fragmental. The edge of each of these terraces marks a stage in the withdrawal of the sea waters from the lowland. The lake-facing edge of the lower terrace has an altitude, with reference to present sea level, of approximately 345 feet; the second, 360–370 feet; and the third, about 500 feet.⁶ However, the treads of the terrace steps are not horizontal; rather, each one rises at a very slight angle from its edge to the base of the next, so that the actual step-up, depending on locality (Pl. LXVII, Fig. 1), is only some twenty to forty feet.

Within the plain there are lesser landforms which merit attention. Numerous streams have eaten their courses into the soft ma-

⁵ Dresser, John A., *Part of the District of Lake St. John, Quebec* (Gov. Print. Bureau, Ottawa, 1916), Memoir 92, Geol. Ser. No. 74 : 4, 48. See also Blanchard, Raoul, "Le Saguenay et le Lac Saint-Jean," *Rev. de géog. alpine*, 21 : 26–33. 1933.

⁶ Dresser, *op. cit.*, p. 3. See also Montgomery, R. H., *Precise Levelling in Quebec North of the St. Lawrence River* (Acland, Ottawa, 1929), Geodetic Survey of Canada, Publication No. 18; and Sinclair, G. E. B., "Bench Marks between St. Félicien and Isle Maligne, Quebec, Via Provincial Highway No. 15, around North Side of Lake St. John," unpublished, 1929.

one hundred feet high to the lowland about St. Prime (Pl. LXVII, Fig. 3). Toward the lake the escarpment lowers gradually to Pte. Bleue, and from the crest, where pre-Cambrian rocks are much exposed, it slopes gently to the southeast, merging imperceptibly with the general terrace level which overlaps it on that side (Pl. LXXII, Fig. 2). Between Val Jalbert and Chambord (Map 9) there are two small ridges: the Côte Pte. aux Pins and the Côte Chambord. They owe their existence to upraised portions of the bedrock which extend from the base of the upland in a northwesterly direction to the lake. The extension of this structure can be traced in the Isle aux Couleuves and the Isle de la Traverse (Map 9). The Côte Pte. aux Pins follows this trend, dipping gently to the lake. Its shape is much like that of a shallow, inverted canoe and, unlike the Côte St. Prime, there is no escarpment. It is mantled with the soft materials that comprise the plain. The Côte Chambord is like its neighbor in trend and shape, differing from it in being larger, in not quite reaching the lake, and in having near its top a thinner mantle of deposits, so that bedrock is exposed in the watercourses and along roadside ditches. Both these forms vary in altitude from about 350 feet at their lakeward ends to over 500 feet where they join the upland. Other interruptions to the lowland plain are minor ones. At certain places glaciated bosses protrude from the general level.⁸ They are like the rock hills which occur in greater profusion in the area mentioned, to the northeast of the lake. These outcrops occur in the plain between the Belle River and the Décharges, northwest of the village of St. Prime and just south of Normandin (Maps 9-10). To the north, along the outer edge of the lowland proper, they become so numerous as to warrant the inclusion of the area in which they occur as part of the upland landscape. In addition, there are near St. Jérôme two kames which resemble large, partly submerged whales with their heads pointed to the northwest (Map 9).⁹

The edge of the encircling higher land varies in altitude from place to place but even at the lowest points it forms an easily discernible rim against the horizon. Along the southern edge of the lowland, from Lake Vert to the Ashuapmouchouan River, the rim appears from below as a forested wall which rises as much as five hundred feet above the plain in the east and descends gradually westward (Map 9, Fig. 5; Pl. LXVIII, Fig. 1; Pl. LXXIII, Fig. 1).¹⁰ The

⁸ *Ibid.*, p. 27.⁹ *Ibid.*, p. 45.¹⁰ *Ibid.*, p. 4.

eastern rim of the basin is lower and more broken, and is deeply indented by eastward-reaching fingers of the plain (Fig. 5; Pl. LXVII, Fig. 2; Pl. LXXIII, Fig. 2). The northern border of the lowland is the least conspicuous and, like the eastern rim, has terrace tentacles which invade for considerable distances, particularly along the stream courses. When seen from afar, however, it appears well marked, and only as one approaches closely is it found to be less sharply defined. This northern boundary has been drawn where the rock outcrops become plentiful enough to give one the impression of the plateau landscape, or, in other words, at the edge of the *lowland proper*.

In essence, then, the surface of the region consists of a large lake bordered by clay and sand terraces, which are in turn flanked by a glaciated upland.

Lying on, or deeply cut into, the surface are the features of the drainage. These hydrographic elements, of which Lake St. Jean is the most conspicuous, are composed of lakes, streams, and swamps. With the recent completion (1926) of dams and barrages at the Décharges the outflowing waters of the lake are controlled to prevent the former fluctuations in level between late summer and spring, and hence to insure a known minimum for the development of hydro-electric power.¹¹ This body of water, of oval shape, presents a vast blue expanse in summer and a plain of snow-covered ice in winter. The Indians knew it as "Piougamik," signifying "flat lake" in their tongue.¹² Its waters are shallow and dotted with small islands, most of which lie in the eastern portion near the Décharges (Map 9). The shore is generally low, so low at Roberval, for example, that a small "sea wall" has been constructed to protect the edge of the lower terrace from storm waves. Where the Côte St. Prime reaches the shore at Pte. Bleue, stony headlands, twenty to forty feet in height, front the water. The northern shore west of St. Henri de Taillon is swampy, except here and there where recent wave-cutting has produced low but sharp embankments. The same type of erosion has resulted in a steep terrace face, at some points fifty feet high, between St. Jérôme and Pte. de la Traverse. Southwest of St. Gédéon

¹¹ *Industry in Saguenay and Lake St. John District* (Price Bros. & Co., Ltd., Chicoutimi, n.d.). See also Dresser, *op. cit.*, p. 10.

¹² *Le Saguenay et le Lac St-Jean: Ressources et avantages qu'ils offrent aux colons et aux capitalistes* (Département de l'Agriculture, Ottawa, 1879), p. 10.

for about three miles the shore is low and sandy. The presence of a sandy beach there has led the inhabitants to refer to it, somewhat facetiously, as the "Palm Beach" of the Lake St. Jean area.

The other lakes of the lowland are few and small; Lake Vert is the largest. Where these areally insignificant water bodies do occur they lie at, or close to, the base of the upland (Map 9). In the glaciated highland lakes are very numerous — a decided contrast to the condition in the plain (Map 10).

The drainage pattern of the region is in a sense obversely radial, for into the lake as a hub flow many rivers from practically all directions (Map 10). To be sure, the outlet (the double one of the *Décharges*) to the east has its waters flowing away from the lake, but even that line acts as a spoke in the radial pattern. The river *Peribonca*, the longest of the streams, has its source some three hundred miles back in the plateau to the north; it pursues a course through rocky gorges and over innumerable falls and rapids to tumble finally into the lowland near *Honfleur* (Pl. LXIX, Fig. 1). From this point it forms a broad, sluggish stream to its mouth at the north-central shore of the lake (Pl. LXVII, Fig. 2). Its western neighbor, the *Mistassini* and its tributaries, is two hundred miles long. Below *Dolbeau* (Map 9) its waters are broad and placid, but above it flows over a series of rock ledges exposed as it dug itself into the soft materials of the lowland (Map 10). In the upland its course is torrential. The river *Ashuapmouchouan* (also *Chamouchouan*) is in all essentials similar to the *Mistassini*. Just south of *Val Jalbert* the *Ouiatchouan* plunges two hundred and forty-nine feet over the edge of the escarpment and then rushes across the constricted portion of the plain to the lake (Pl. LXIII, Fig. 1). At the settlement of *Desbiens* the *Metabetchouan* joins the lake and forms near the mouth an embayment behind which several falls and rapids mark its course back into the highland (Pl. LXIX, Fig. 2). The *Belle River* descends the upland rim southwest of *Hébertville* and then trends northwest to the lake. One of its tributaries, the *Aulnets*, drains *Lake Vert* and is the route that was used by *Père de Quen* in crossing the lowland. There are several small falls in its path through the lowland where it, like many of the other streams, has exposed the rock basement. The lake itself pours its waters to the east through the island-dotted gorges of the *Grande* and the *Petite Décharges* (Map 10). The two *Décharges* join downstream from the

town of St. Joseph d'Alma to form the upper Saguenay. From the lake to tidewater on the Saguenay, a distance of some thirty miles, the waters descend more than three hundred feet. A study of Map 10 will indicate that there are many lesser streams crossing the lowland, all of which tend to emphasize further the roughly radial pattern pointed out above. Some are much smaller than others and their sources may or may not tap the upland.

Between the stream lines the adequacy of drainage of the lowland varies greatly from place to place. The predominantly clay areas (Map 9) are as a whole well drained by large and small streams with their tributary gullies, although there are small, infrequent patches where the nearly level clay surface is not tapped sufficiently well by stream lines to insure rapid run-off from the impervious materials. The major portion of the "non-swamp" area lies to the northeast, east, south, and southwest of the lake; in addition there are two large outliers along the upper Ticouapé River and the middle part of the lower Petite Peribonca. With the exception of these two areas, the lowland to the north of the lake is a conglomeration of sand-plains and swamps. It may be thought of as a swamp country in which there are islands, large and small, of sandy plain. The fact that the clays are relatively well drained and the sandy areas poorly drained seems contrary to logic until it is known that the sandy portions are directly underlain by clays which hinder or prohibit the downward movement of ground water — thus insuring swamps where the sand mantle is thin and "islands" where it is thicker. Also, the porous sands have probably lessened the amount of run-off and hence have hampered the development of an elaborate drainage system (contrast the upper portion of the Ticouapé basin, in the clay, with the lower portion which lies in the sand, as shown in Maps 9-10). The wettest part of the sand and swamp country occupies the Taillon Peninsula, the land between the mouths of the Peribonca and the Mistassini, and the lower part of the Ticouapé basin as far west and south as the Ashuapmouchouan. Canton Racine (Map 11) is practically all swamp. However, as one reaches the higher ground, toward the upland, the swamps decrease in size and number, to the gain of the sand-plains. The raising of the lake level by the power company has somewhat enhanced the swampiness of the area, particularly near stream mouths.

Soils. — The soil mantle of the plain owes its major characteris-

ties to the events which occurred during the Champlainian submergence, but since then certain factors, chiefly drainage conditions, have slightly altered the edaphic set-up. The lowland soils vary from compact, gray clays to porous, yellowish sands. The clay areas have some few patches in which there is a thin accumulation of peaty materials over the impervious loams. Where the kames occur, near St. Jérôme, the soil is a loose collection of sand, gravel, and glacial boulders. In the case of the Côte St. Prime, bedrock is exposed along the crest and in small outcrops near the upper part of its southeastern slope, and also here and there in the plain, as already mentioned, where polished basement rock protrudes. Narrow valley bottoms, lying below the general level, possess bordering threads of alluvium. In the sand and swamp area the dominant soil is sand, with an occasional admixture of sandy loam. Over large tracts peaty swamp mucks occur on top of and encompassed by the lighter soils. Also in this sand and swamp country are the two large areas of clay loam referred to above. The soil mantle of the plain reaches depths of from one hundred to two hundred feet in places, while in others the basement complex is laid bare.¹³ The upland soils are in decided contrast, for at the base of the rim there is usually a sudden change from thick marine deposits to a thin and patchy mantle of glacial materials (Pl. LXXIII, Fig. 1). The soils of the entire region are distinctly immature — undoubtedly an association with their recent origin together with the sluggishness of the soil-maturing processes in an area with long, severe winters and short summers (Table I).

Vegetation. — Under former conditions the plain supported a forest growth throughout.¹⁴ The area is located, in terms of vegetation, along the southern margin of the "Northern Forest Belt" of Canada, with its southeastern edge touching the "Transitional Belt."¹⁵ Conifers make up the bulk of the forest, with, in addition, a sprinkling of broad-leaved trees. The upland still preserves the appearance of a conifer sea, broken only by recent burns, rock outcrops, and pulp-wood slashings (Pl. LXXIII, Fig. 1). The forest of

¹³ Dresser, *op. cit.*, p. 45.

¹⁴ *Ibid.*, p. 16. See also *Report of the Commissioners for Exploring the Saguenay* (Neilson & Cowan, Quebec, 1829). See, in addition, the references cited in the footnotes to the introduction to this paper.

¹⁵ Craig, Roland D., "Forest Resources of Canada," *Econ. Geog.*, 2: 394-413. 1926.

the plain has undergone marked modification because of the "Great Fire" of 1870¹⁶ and the clearing of the land by the farmers. The clay areas have been practically stripped, although new growth is apparent along the valley sides and the lake shore, as well as in the infrequent swampy patches. The Côte St. Prime is forest-covered, chiefly that portion toward the Indian Reserve at Pte. Bleue (Pl. LXXII, Fig. 2). In the sand and swamp areas the picture is one of contrast, with most of the land still in forest of one sort or another. Areal inconspicuous clearings have been made in these parts, some of them very recent (Pl. LXX, Fig. 1) and others marked by farm abandonment; they are confined to the sides of the main roads. This forest presents an extremely complex pattern composed of spruce and tamarack swamps mixed with jack-pine plains (Pl. LXX, Figs. 2-3; Pl. LXXI, Fig. 1). In the higher parts of the northern plain the jack-pine plains become dominant, although even here there are numerous and often extensive patches of the swamp associations. Recurrent burning of the drier parts has resulted in a jack-pine association made up of this scrubby pine and poplar, birch, pin cherry, and maple, with a ground cover of bracken, reindeer moss, and blueberry (see pp. 339-340 for a list of trees and smaller plants). In addition to covering most of the sand and swamp area, the forest continues on into the upland — a contrast to the condition where the clays border the plateau.

Climate. — Overlying the natural factors so far described is a set of atmospheric phenomena pertinent to this inquiry into the landscape of the lowland. The climate is characterized by long, severe winters and short, warm summers (Table I).¹⁷ Precipitation varies from a low of 1.4 inches in March to a high of 3.6 inches in July. The prevailing winds are westerly, being southwesterly in summer and often northwesterly in the spring and fall. As a result of the cold-season temperatures the streams are icebound from six to seven months each year in the lowland and for a somewhat longer period in the higher lands. At this time the lake is a great sheet of snow-covered ice, with its level tending to fall until the spring "break-up." Meanwhile the conifers stand clothed but dormant, while the decid-

¹⁶ Audet, François J., *Canadian Historical Dates and Events* (C. Beauregard, Ottawa, 1917). See also Dresser, *op. cit.*, p. 16.

¹⁷ The climate is Dfb, according to Köppen, W., *Die Klimate der Erde* (Berlin u. Leipzig, 1923).

uous trees are barren, and the land, like the lake, is mantled with deep snows. The effect of the climate on man's activities will be discussed later, but from the foregoing meager description it may be seen that atmospheric conditions play a large part in the seasonal behavior of the milieu of those activities.

TABLE I

CLIMATIC STATISTICS FOR ROBERVAL, LAKE ST. JEAN
(Obtained from the Meteorological Service of Canada, Toronto)

Temperature (Fahrenheit)	Ten-year average												
	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Yr.
Mean temperature . .	0	2	19	35	50	60	66	62	53	41	25	10	35.2
Mean daily max. . . .	11	14	30	44	60	69	76	73	63	50	32	17	
Mean daily min. . . .	-10	- 9	8	26	39	50	56	52	43	33	18	3	
Absolute max.	47	49	66	72	89	95	97	93	90	80	65	47	
Absolute min.	-44	-36	-25	- 2	18	29	40	34	24	16	-11	-46	
Precipitation (inches)													
Rain	0.1	0.1	0.4	1.9	2.4	3.4	3.6	2.4	2.9	2.3	0.9	0.4	
Snow	15	14	10	4	1	0	0	0	0	2	9	17	
Total precipitation . .	1.6	1.5	1.4	2.3	2.5	3.4	3.6	2.4	2.9	2.5	1.8	2.1	28.0

THE OCCUPANCE

A DESCRIPTION OF THE CULTURAL PORTION OF THE LANDSCAPE

So far, the picture of the region lacks the human element in any great detail and consequently the multiplicity of forms that are associated with human settlement.

The Origin of the Present Conditions

The Indians. — Prior to the arrival of the Europeans the Indians held sway over the lowland and the adjacent vast plateau country. However, the insecurity of their foothold on the plain and the small degree of modification accomplished by them is illustrated in the fact that today they are represented only at the Pte. Bleue Reserve (Map 9). There they spend a leisurely summer, which is followed by the winter activities of hunting and trapping in the upland. In the

late spring they return with their furs to the Hudson Bay Company's post at the reservation.

The missionaries. — In the seventeenth century the Jesuits appeared on the scene, extending the work of the Church from Tadoussac, up the Saguenay, into the lowland, and beyond toward James Bay. Their first permanent establishment in the plain was at Metabetchouan (Desbiens, see Map 9), St. Charles Mission, on the right bank, near the mouth, of the river of the same name. This was in 1665.¹⁸ From such humble beginnings the work of the Church has continued until today the spires of the houses of worship rise high above every settlement in the region (Pl. LXVIII, Fig. 1; Pl. LXXI, Fig. 3).

The fur traders. — Along the trail blazed by the Jesuits came the traders in furs, at first with no permanent posts, but later with posts at Chicoutimi on the Saguenay, at Metabetchouan, Pte. Bleue, another on the Ashuapmouchouan, and still others toward Hudson Bay.¹⁹ The lucrative trade in pelts resulted in the region being closed by law to other activities, until the clamor of public opinion and governmental inquiry, beginning about 1825, ended in colonization activities, which were in full swing by mid-century.²⁰ The only remnant in the plain of this great fur-gathering era is the little post at Pte. Bleue.

The lumbermen. — The work of the Church and the trading companies gave notice of the great pine forests of the Saguenay, so that by the opening of the nineteenth century the lumbermen were pushing their way up the great river. So far as the lowland itself is concerned, the lumbermen were of importance in calling attention to the large amounts of arable land bordering the lake: although the modern counterpart of their work is represented by the pulp and newsprint mills at Dolbeau, Riverbend, and Desbiens (Maps 9-10). Difficulties in transportation and the forest fire of 1870 doomed to failure any large lumbering operations in the plain.

The colonist-farmers. — The great modification of the lowland began with the first permanent agricultural settlement at Hébertville (Map 9) in 1851. Two years before, M. l'Abbé Hébert, heading

¹⁸ Thwaites, *op. cit.*, 60:322.

¹⁹ *Ibid.*, 69:111. See also *Le Saguenay et le Lac St-Jean . . .*, pp. 3-4.

²⁰ *Le Saguenay et le Lac St-Jean . . .*, p. 5. See also *Report of the Commissioners for Exploring the Saguenay*.

a society of colonization, secured from Parliament the right to develop the southeastern part of the plain.²¹ He followed this with preparatory work which led to permanent occupation, using De Quen's old route via Lake Kenogami in order to avoid the Décharge rapids. From this origin in the southeastern corner the French-Canadian settlers, derived from the St. Lawrence littoral, have spread westward and northward until now, in varying numbers, they encircle the lake (Map 13, p. 338).

The Present Conditions

Inasmuch as this spread of population, with all that it entails, has taken place through the slow extension of the road and, because the road is at present the artery along which the life of the region courses, it is proposed to deal with the road pattern first, taking it as a unifying concept by means of which the associated phenomena may be described.

The road. — The first roads built in the lowland were in the vicinity of Hébertville.²² One of these connected Lakes Kenogami and Kenogamichiche (Lake Vert), and Kenogami was in turn tied to the settlements on the middle Saguenay. During the 'seventies a road was extended westward, south of the lake, to the Ashuapmouchouan. The less desirable lands, to the north of the lake, secured roads at later dates and even today there are large gaps in the road pattern there (Map 12). Many of the roads were for a long time without bridges over the larger streams; a ferry or, in winter, the ice had to be used at these points.²³ Temporary routes developed on the lake ice; for example, it was common for the inhabitants of the village of Peribonca to drive their sleighs directly across the lake, some twenty miles, to Roberval in order to procure supplies and mail. This was done until 1926, when the railroad was completed to Dolbeau. At present it is possible to drive an automobile entirely around the lake during the warmer season; in the winter, however, the snow and cold demand the use of sleighs.

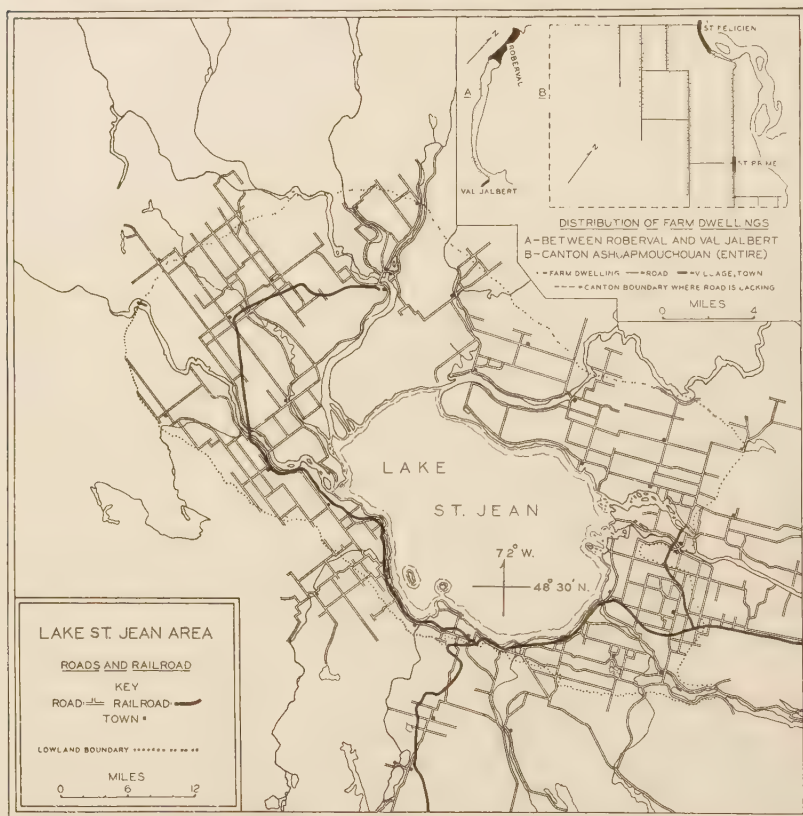
Except in the relatively few instances in which the conditions

²¹ Laliberté, Abbé André, *Les Fêtes du Monument Hébert, Hébertville, Lac Saint-Jean, 6 Juillet, 1926* (Le Syndicat des Imprimeurs du Saguenay, Chicoutimi, 1926), particularly pp. 17-25. See also Blanchard, *op. cit.*, pp. 78-89.

²² *Le Saguenay et le Lac St-Jean* . . . , p. 10.

²³ Hémon, Louis, *Maria Chapdelaine: Récit du Canada français* (Bernard Grasset, Paris, 1924), pp. 25-27. See also Blanchard, *op. cit.*, pp. 89-94.

of drainage or of surface do not permit, the roads are laid along the lines of the survey. This relationship is so close that it is necessary to describe the survey pattern before taking up the details of the road pattern. The region is divided into cantons, ranges, and lots,



MAP 12. Based on field work and reference maps 1-4 and 9 (see p. 341).
The inset is based on plane-table work by the author

in order of decreasing size (Map 11). The cantons radiate from the lake in varying sizes and shapes but, regardless of area or form, each one is divided into long strips, usually one mile in width, known as "ranges." Each range is in turn divided into smaller strips, at right angles to its trend, ordinarily one mile in length and one sixth of that distance in width — these are called "lots." This strip system of

survey was taken directly from the old French settlements along the St. Lawrence,²⁴ where the idea was to have as many farms as possible fronting the water. It has resulted in certain irregularities in the areas and the trend of the lots in the Lake St. Jean region, as shown in Map 11. The vast majority of the roads follow either range or lot lines (compare Maps 11 and 12), so that the line of the highway is very straight until a turn is reached, when it forms a right angle and then proceeds to the next turning. As a consequence, the roads produce a sort of broken spiderweb pattern, which is broken because of the lake, and the absence of roads in most of the sandy or swampy areas (compare Maps 9 and 12).

Conditions of drainage or of surface may cause local deviations from the survey lines or force the roads away from certain portions. The occurrence of small lakes, as Lake Vert, necessitates a bending of the highway around their shores. In other places, as at Desbiens, the valleys are of sufficient depth to cause the road to desert its straight line in the attempt to find a crossing. Where rock outcrops are numerous, as northeast of the lake, the thoroughfare is forced to deviate, although its linear and rectilinear quality is still discernible (Pl. LXXII, Fig. 1). Where the larger streams become very broad, the roads seek narrower crossings far upstream, as at Dolbeau, Honfleur, and St. Félicien. The Grande and Petite Décharges are easily bridged only in their narrow eastern courses at a considerable distance from the lake. The entire absence of roads in Canton Racine is a reflection of the swampy condition of the area between the Peribonca and Mistassini river mouths. Outside the lowland the roads become mere tentacles leading for varying distances into the plateau country.

In addition to the road in the ordinary sense of the term there are the other kinds of roads, or "ways," viz. the railroads and the water roads. The railroad from Quebec enters the lowland at Chambord Junction (Map 8). From this place one branch goes west around the lake to Dolbeau, another east to Chicoutimi and Bagotville. In the eastern part of the lowland a short-line tentacle joins the eastern branch to the Décharges (Map 12).²⁵ The water roads are

²⁴ Miller, Émile, *Terres et peuples du Canada* (Librairie Beauchemin, Montreal, 1912), notes on pp. 30, 32, 108. See also Munro, William B., *The Seigniorial System in Canada, A Study in French Colonial Policy* (Longmans, Green & Co., New York, 1907), especially p. 24.

²⁵ Contrary to the Standard Topographical Map, Quebec, Roberval Sheet, Sheet 34 (Ottawa, 1929), the railroad does not extend to the lower falls of the Peribonca.

the rivers and the lake. The Ashuapmouchouan, Mistassini, and Peribonca are used by the Indians in their seasonal migrations to and from the upland, and the lake enables their canoes to reach the reserve at Pte. Bleue. Spruce bolts, for making pulp, travel down the Mistassini and Metabetchouan particularly, journeying from the forests of the upland to the lake, where small steam tugs pick up those at the mouth of the Mistassini and raft them across the lake for the mill at Riverbend (Pl. LXIX, Fig. 2; Pl. LXXIV, Fig. 1). During the ice-free season there is some nonschedule movement of persons and goods by small lake boats, but this latter phase is of decreasing importance since the extension of the railroad to Dolbeau; it has taken on the aspect of Sunday excursions, chiefly between Roberval and Peribonca (Pl. LXVII, Fig. 2).

Road connections with the outside world are few (see Map 8). The railroad joins the lowland with Quebec to the south and with Bagotville and Chicoutimi on the Saguenay tidewater. The highway to Chicoutimi continues to St. Siméon on the St. Lawrence, although its narrowness and steep grades help in the isolation of the lowland. Another road connects the southeastern part of the plain directly with Quebec. This "road," a somewhat improved version of the old Quebec-Lake St. Jean Trail,²⁶ leads the traveler a rough and winding chase through the Laurentides Park.

The agricultural forms associated with the road. — Closely related to the highways are many apparent landscape features. In the clay areas, where roads are more numerous, these features are dominantly cultural, whereas in the sand and swamp portions they are chiefly of natural origin. The outstanding cultural element connected directly with the road is the farm. Along with the farm go the agricultural people, the buildings of the farmstead, the crops, and domestic animals.

Each farm occupies a strip of land which fronts on the road and extends at right angles to it. This strip arrangement, originating in the survey system, causes one end of the farm to touch the highway and the other to lie one mile from it. It is further stressed by the common practice of dividing the farm into two or more strip fields, oriented with the lines of the main strip (Pl. LXXIV, Fig. 2). The result of this is the transformation of the cleared parts of the plain

²⁶ Davenport, Mrs., *Journal of a Fourteen Days' Ride through the Bush from Quebec to Lake St. John* (Daily Mercury Office, Quebec, 1872).

into a succession of long, narrow fields, equally conspicuous from the ground or the air. Another result is the placing of the farmstead directly contiguous to the road, for there are the place of egress and also, when heavy snows mantle the land, the location which facilitates the gaining of the highway by the horse and sleigh. Other factors difficult to evaluate, such as gregarious tendencies, undoubtedly enter into this hugging of the road (Pl. LXXI, Fig. 2; Pl. LXXIII, Fig. 2). The buildings of the average farmstead comprise a farmhouse, a barn, a wagonshed, an outdoor oven, and small sheds for fowl and hogs. The house is invariably placed close to the road. It is ordinarily square in ground plan, two stories in height, and capped with a mansard-like roof. The barn is set back in such a position as to give easy access to both the fields and the farmyard. Outdoor ovens are the rule; they are placed within easy reach of the woodshed and the back of the house. Other structures follow no particular plan of arrangement. Many farmers have hay barns located near the midpoint of the farm strip, but otherwise no buildings appear away from the farmstead. Wood, usually unpainted, is the common material of construction (Pl. LXXI, Fig. 2).

The persons occupying the farmstead, with their French tongue and ancient customs, give the region a distinctly Old World complexion familiar to all who have traveled in French Canada. The names of the villages and towns reflect this condition directly, as do many other things, such as the operation of the spinning wheel in the processing of wool for the making of the famous French-Canadian homespun. The life of the family is entwined with the land and the parish church; it may be said, without any intent of sacrilege, that their energies are devoted to their animals and crops for six days of the week and to the worship of God on the seventh. During the summer the work is directed toward the production of animal and human food, together with the activities of dairying and the transportation of milk to the local cheese-and-butter factory. With the advent of winter the fields are deserted, but the other activities go on without interruption. In spite of the hardships of the severe winters, it is a calm, steady, perhaps enviable, existence, little interfered with by the present world economic depression and its attendant cataclysms.

Crop production is centered on feed for animals, chiefly dairy cattle. The importance of hay and pasture in the agricultural

economy warrants the inclusion of the area in the Forest and Hay Region of North America, although in many respects, such as the export of cheese, it takes on the aspect of an outlier of the Hay and Dairying Region.²⁷ Roughly two thirds of each farm is devoted to the production of mixed hays and to pasture, the remainder to oats, wheat, and barley chiefly, but in lesser amounts to potatoes, soup peas, buckwheat, turnips, and gardens. It will be noted that the crops are of the hardy type — an obeisance to the dictates of a climate which allows on the average a growing season of not much over three months.

In the sand and swamp portions there are relatively few farms, for reasons already noted. Farm abandonment appears in these areas, partly as a reflection of soil and drainage conditions, but also because of a longer-continuing isolation and the recent raising of the lake level. This abandonment is noticeable in the Taillon Peninsula, along the road east of Peribonca, and in the vicinity of St. Méthode. In spite of this, farm abandonment is not areally conspicuous, partly for the reason that the amount of land in farms in these portions was never very large. The higher parts of the sandy terraces support occasional farms, often isolated from one another by spruce swamps and burned-over jack-pine plains. This is especially true along the roads west and north of Dolbeau, where recently, as a result of governmental inducements, new and pioneer-like farms are being established (Pl. LXX, Fig. 1). It remains to be seen what modern methods, coupled with encouragement of a material nature by the government, can do with these lands.

Regardless of the location of the farm the domestic animals constitute the hub of the rural economy. Well-established farms, in the clay areas chiefly, have dairy cattle, horses, sheep, hogs, chickens, and ducks. The numbers vary from farm to farm, but it is not uncommon for one to have fifteen or twenty dairy cattle.

Most of the products of the farm are consumed in the plain. However, great quantities of cheese are shipped to Montreal, along with lesser amounts of butter, beef, mutton, and pork. On a rising market grains and hay may be shipped to Quebec and Montreal. Hay, grains, and potatoes are sent to the "shanties" (lumber camps) in the upland during the winter season.

²⁷ Baker, O. E., "Agricultural Regions of North America," *Econ. Geog.*, 2: 459-493. 1926.

Other phenomena directly related to the road and at the same time dependent on agriculture are the villages and some of the towns. These features are numerous along the roads of the plain, but the upland supports very few (Map 9). In the lowland they are concentrated on the clays, although they do occur in the sand and swamp country. Practically all are located at road crossings or intersections; a few are found at the crossings of the larger rivers (Map 12).

The village patterns conform very closely to the line of the highway, so closely, in fact, that they strongly resemble *Strassendörfer* (Pl. LXXI, Fig. 3; Pl. LXXIII, Fig. 2; Pl. LXXIV, Fig. 2).²⁸ These small concentrations of people depend entirely on the adjacent farms for their existence. The dwellings are frame buildings, placed very close together, and front directly on the street itself. The majority of the village dwellers have their own farms, which extend in strips back of their homes (Pl. LXXIV, Fig. 2). Furthermore, it is very difficult to ascertain, as one travels the roadway, exactly where the village terminates and the more open farming country begins. Each village is dominated by the spire (or spires) of the parish church; actually this is the first thing one sees on approaching.

There are some villages which illustrate a slight departure from the pattern described. They differ in that they possess short offshoots from the main street, as where a road junction or a turn occurs. The village of St. Cœur de Marie shows this modified form (Pl. LXXV, Fig. 1). In cases of this sort the village takes on a T-shape when the offshoot is from the center, or an elbow shape when it has spread around a right-angle turn, as illustrated by Honfleur. Two villages are distinctly irregular in pattern. This is true of the village of Mistassini, where the highway ignores the survey lines in its attempt to cross the river Mistassini and its tributary the Mistassibi, and of the little settlement of Val Jalbert; the road in Val Jalbert makes a small bend away from the lake in order to cross the lower rapids of the Ouiatchouan.

The towns of the lowland are of two kinds: first, those that are dependent on agriculture; second, those that exist because of industrial enterprises. The latter will be discussed subsequently, in a consideration of the nonagricultural forms associated with the road.

²⁸ This is true of St. Bruno, St. Gédéon, Ste. Croix, Chambord, St. Prime, N. D. de la Doré, St. Méthode, Normandin, Albanel, Ste. Jeanne d'Arc, St. Augustin, L'Ascension, and St. Henri de Taillon.

The former are but larger expressions of the villages — villages which have taken on further functions and have, as a consequence, grown in size and complexity of pattern. Towns of this latter sort are Hébertville, Roberval, St. Félicien, and St. Jérôme.

Hébertville possesses an irregular pattern, with tendencies toward rectangularity (Pl. LXXV, Fig. 2). The major portion of the town lies on the right bank of the Aulnets (Aulnais) at the junction of the Lake Kenogami-Lake St. Jean road and the highway which leads south into the upland. The town is centered functionally about a post office, a few general stores, and the church. Roberval is situated on the lake shore between the water's edge and the railroad (Pl. LXXII, Fig. 2). It is oriented to the main street, which parallels the lake, and from this street other short thoroughfares extend at right angles. There are also a few streets of varying length which are subparallel to the main artery. Roberval is dominantly commercial, but the normal school, courthouse, and two churches are illustrative of other functions. St. Félicien is spread along a street which parallels the right bank of the Ashuapmouchouan, with some close building following a road to the southwest, for about a block, to the railroad station. Like Roberval, it is tucked in between the water and the railroad. Its function is commercial, although the magnificent church indicates a religious importance (Pl. LXVIII, Fig. 1). St. Jérôme is similar to Roberval in function, but its pattern is quite different. It occurs where a road following the lake shore meets at an oblique angle a road from the southwest. Because of this the town assumes the shape of a Y.

As may be seen from the airplane photographs, these towns grade into the surrounding fields, which lend to the settlements an atmosphere that one immediately associates with the countryside.

Nonagricultural forms associated with the road. — The industrial establishments associated with the road are secondary throughout the lowland to those of agriculture. They comprise a major hydroelectric development, pulp and newsprint mills, cheese factories, small sawmills, blueberry canneries, and quarries. Only the first three are of prime importance.

At Isle Maligne, on the Grande Décharge, is a hydroelectric plant, one of the major plants of its kind in Canada (Pl. LXXIV, Fig. 1),²⁹ which is at present developing 540,000 H.P. In connection with

²⁹ *Industry in Saguenay and Lake St. John District*, pp. 10-11.

this plant occur the dams and barrages which were mentioned above in the discussion of the stabilization of the lake level. Power from this place is sent by transmission line to the mills at Dolbeau and across the Laurentians to Quebec. The abundance of power at Isle Maligne has practically crowded out small electric plants elsewhere in the plain. The railroad extension to the Décharges owes its existence to this Isle Maligne development. Located near the plant are the homes of the employees; the officers and foremen live on the north bank, and the other workmen are quartered in straight lines of company houses on the south bank.

The pulp and newsprint mills, and with them the mill towns, are located at Riverbend, Dolbeau, and Desbiens. Riverbend (geographically a part of St. Joseph d'Alma) lies on the north bank of the Petite Décharge (Pl. LXXIV, Fig. 1). It is a small settlement with an irregular, "American" plan of streets whose sides are flanked by homes of the bungalow type. Adjacent, to the west, are the large buildings of the mill and the mammoth piles of pulpwood bolts. The plan of Dolbeau is rectangular, in such a manner that the town is composed of square blocks. Zoning plans have been adopted, so that there is a distinct business section and an equally distinct residential district. It resembles in form, buildings, and other things the modern company towns of the United States — so much so that it seems a cultural interloper which has somehow gained admittance to the French-Canadian circles of the region. The mill at Dolbeau was in no small way a factor in the extension of the railroad from St. Félicien to the Mistassini by 1926, and is also the reason for the attempts to improve the main highway around the north side of the lake. Desbiens, at the mouth of the Metabetchouan, retains its French atmosphere in spite of its industrial function. It fronts on the main road and extends to the railroad in a simple block pattern.

Pulp wood, to feed the mills of these towns, is derived from the forests of the upland. The newsprint produced is shipped out by rail to Quebec, or to the head of navigation on the Saguenay and thence to the outside world by boat.

The town of St. Joseph d'Alma (including Riverbend) is a reflection of both agricultural and industrial activities. It serves the mill and the farm, in addition to the church. It is famous throughout the region as a place possessing a regular motion-picture theater.

Its pattern, irregular yet simple, is shown by the airplane photograph (Pl. LXXIV, Fig. 1).

Cheese-and-butter factories are scattered throughout the lowland, but are definitely concentrated in the clay areas. These small establishments reflect the activities of the farm and consequently differ, in that manner, from the pulp mills and the power plant. Situated as they are on the edge of the road, either in the towns and villages or here and there in the country, they will be found to have a distribution conforming to the road pattern.

At Roberval, St. Félicien, and St. Henri de Taillon are small blueberry canneries. Their operation is confined to a few weeks in midsummer, and their number, small size, and spasmodic operation relegate them to an insignificant place in the areal scene.

There are numerous small sawmills located in, or adjacent to, the towns and villages, at places where small falls (or the damming of a stream along the side of the road) provide power for the making of laths, shingles, and rough boards. Their meager production is consumed locally.

This general treatment of the nonagricultural forms related to the road may be concluded with the mention of two quarries. One, a shale quarry, lying just to the north of Roberval on the road to Pte. Bleue, furnishes material for road surfacing; the other, northwest of Roberval on the St. Prime road, provides a handsome pink granite used in the construction of churches and other public buildings in the adjacent portion of the lowland. Obviously, then, to judge from the foregoing discussion, it is agriculture, rather than industry, that gives character to the settled parts of the Lake St. Jean lowland.

THE DISTRIBUTION OF POPULATION

A KEY TO THE LANDSCAPE OF THE LAKE ST. JEAN LOWLAND

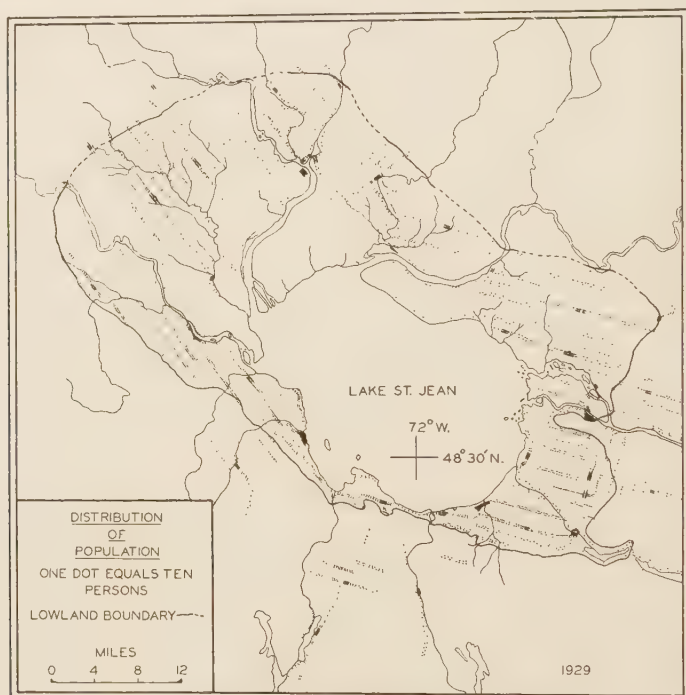
The agricultural and industrial forms which are distributed in relation to the arteries of travel owe their existence, as do the arteries themselves, to the presence of man in the area. It is he who has extended the highway and moved along it, establishing his farms and settlements where conditions were favorable. It is he who has, at a few points, attached the industrial forms to the surface of the earth. Just as important to the areal scene is the fact that he has avoided certain parts of the lowland, and has left the upland nearly in

its natural state. In this sense, then, the distribution of man in the region is the key to the distribution of other forms, both natural and cultural.

Its relation to other landscape features. — When we turn to the details of the population distribution, certain correlations with factors already described begin to stand out. The population is seen to be concentrated in the lowland at the expense of the plateau — a concomitant to contrasts in power of attraction between the glacially eroded upland and the thickly soiled lowland. Within the lowland concentrations occur primarily on the areas of clay loam. In the other portions conditions of drainage and soil are such as to retard any great settlement, although locally, as near Dolbeau and Mistassini, the presence of labor-demanding mills has aided families to take up farms; the head of the family works in the mill, or perhaps in the “shanties” in the winter season, and the other members of the family carry on the work of the farm. Also, as noted, government inducement is bringing about a new, purely agricultural settlement in parts of the sandy lands.

Its pattern of distribution. — The population pattern of the lowland is rather extraordinary (Map 13). Because population follows the road, it is linear but, because it follows only roads which lie along range lines and avoids those along lot lines, it is discontinuous. The result is straight lines of population (Pl. LXVII, Fig. 3; Pl. LXXI, Figs. 2-3; Pl. LXXIII, Fig. 2; Pl. LXXIV, Fig. 2). To clarify this pattern a detailed map is presented (see the inset on Map 12). Part *B* of this map shows Canton Ashuapmouchouan with its roads, farm dwellings, and the settlements at St. Prime and St. Félicien. The farmhouse is taken as the point of attachment of the population to the earth's surface. The roads which extend northwest-southeast follow range lines (check with Map 11); the roads at right angles to these run along the lines of the lots. Note that the farm dwellings hug the courses of the range-line roads but ignore the lot-line roads almost completely. If this distribution is multiplied for the other cantons of the plain, the complete pattern shown on Map 13 is produced. The exceptions to this straight-line distribution (see p. 329, discussion of the occasional deviation of roads from survey lines) are also illustrated in the inset on Map 12. In part *B* the road north of St. Prime is forced to curve with the edge of the water; hence a curve in the line of population follows.

A further example of this is shown in part A, where the road between Roberval and Val Jalbert, bordering the lake shore, causes the population line to bend with it. The rule and the minor exceptions



MAP 13. Based on field work, Royal Canadian Air Force photographs, and data from *Statistiques municipales pour l'année civile, 1929*, Bureau of Statistics, Quebec, and *L'Annuaire des Comtés de Chicoutimi et du Lac St-Jean*, Chicoutimi, 1929

thus exemplified in detail, when extended to the rest of the lowland portray the essentials of the population pattern.

CONCLUSION

The attempt has been made to describe, by means of maps, photographs, diagrams, and text, the landscape of the Lake St. Jean lowland in such a manner as to produce a concrete picture in the mind of the reader.

This landscape has undergone a considerable change from the

time of its discovery in the seventeenth century to the present day. This change has been accomplished chiefly by the French-Canadian farmer. By neglecting certain areas and highly developing others he has produced the present patterns of the landscape complex. The unifying element is the road, along which he moved and on which the circulation of the region still depends. By settling directly at the roadside and extending his strip fields back from the road he has produced in the densely settled portions a continuous area of strip fields, through which the lines of population run as major threads in the warp and woof of the landscape pattern. The lack of these threads in many of the sandy and swampy parts of the plain and in most of the surrounding upland denotes areas of little modification from the original natural condition.

A PARTIAL LIST OF TREES AND SMALLER PLANTS IN THE LAKE ST. JEAN AREA

This list is based on that of Dresser, *op. cit.*, pp. 17-18. Several additions have been made by the author. The botanical names and most of the common names have been checked in *Gray's New Manual of Botany*, Seventh Edition (American Book Company, New York, 1908).

Pinus Banksiana, jack pine, northern scrub pine
 Pinus resinosa, red pine
 Pinus Strobus, white pine
 Picea mariana, black spruce, bog spruce
 Picea canadensis, white spruce
 Abies balsamea, balsam fir, balsam
 Thuja (Thuja) occidentalis, white cedar, common cedar
 Larix laricina, tamarack, black larch, American larch
 Populus tremuloides, poplar, trembling aspen, American aspen
 Populus balsamifera, poplar, balsam poplar, tacamahac
 Betula papyrifera, white birch, paper birch
 Betula lutea, yellow birch
 Betula pumila, swamp birch, low birch
 Betula glandulosa, dwarf birch
 Acer spicatum, mountain maple
 Acer negundo, box elder, Manitoba maple, ash-leafed maple
 Acer pennsylvanicum, striped maple, moosewood
 Acer saccharum, sugar maple, rock maple
 Acer rubrum, swamp maple, red maple
 Salix nigra, black willow
 Salix lucida, shining willow
 Salix rostrata, common willow
 Salix discolor, glaucous willow
 Salix candida, sage willow, hoary willow
 Salix cordata, willow, no other common name

Salix petiolaris, willow, no other common name
Prunus pennsylvanica, pin cherry, fire cherry, bird cherry
Prunus virginiana, choke cherry, black cherry
Prunus pumila, sand cherry
Fraxinus pennsylvanica, red ash
Fraxinus pennsylvanica variety *lanceolata*, green ash
Fraxinus nigra, black ash
Ulmus americana, white elm, American elm
Ulmus fulva, slippery elm, red elm
Pyrus americana, mountain ash
Alnus mollis, downy green alder
Alnus incana, speckled alder, hoary alder
Cornus canadensis, dogwood, bunchberry, dwarf cornel
Cornus suecica, dogwood, no other common name
Cornus circinata, dogwood, round-leafed dogwood
Cornus sericea, kinnikinnik, silky cornel, dogwood
Cornus stolonifera, red-osier dogwood, dogwood
Sambucus canadensis, common elder
Sambucus racemosa, red-berried elder
Amelanchier canadensis, service berry, shad bush
Taxus canadensis, American yew, ground hemlock
Rhamnus alnifolia, buckthorn
Viburnum Opulus, arrow-wood, high-bush cranberry, red berry
Viburnum pauciflorum, squashberry
Corylus americana, hazelnut
Spiraea salicifolia, meadow sweet
Myrica Gale, sweet gale
Symplocarpus foetidus, skunk cabbage
Gaylussacia dumosa, dwarf huckleberry
Gaylussacia baccata, black huckleberry
Vaccinium pennsylvanicum, low sweet blueberry
Vaccinium canadense, sour-top, velvet-leaf blueberry
Aster lateriflorus, aster
Cryptogramma Stelleri, rock brake
Ledum dilatatum, Labrador tea
Chamaedaphne calyculata, leather leaf
Sphagnum, many species, bog mosses
Cladonia rangiferina, reindeer moss

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CHIEF REFERENCE MAPS USED IN STUDYING THE REGION

1. Carte Regionale du Lac St-Jean, Comprenant les Cantons Arpentés, Département de Colonisation, des Mines, et des Pêcheries, Quebec, 1923, 1929.
2. Roberval Sheet, Sheet 34, Standard Topographical Series, Natural Resources Intelligence Service, Dept. Int., Ottawa, 1929 (not contoured).
3. Map of Saguenay Division, Price Brothers & Company, Ltd., Chicoutimi, 1929.
4. Resource and Railroad Map, part of Quebec Province, Natural Resources Intelligence Service, Dept. Int., Ottawa, n.d.
5. The Counties of Chicoutimi and Lake St. John, Province of Quebec, J. F. Grenon, Chicoutimi, 1928.
6. Railway Map of Southeastern Canada, National Development Bureau, Dept. Int., Ottawa, 1930.
7. Automobile Roads between Canada and the United States (Atlantic Sheet), Natural Resources Intelligence Service, Dept. Int., Ottawa, 1930.
8. Canoe Routes from L. St. John to L. Mistassini, Natural Resources Intelligence Service, Ottawa, n.d.
9. Carte Routière et Touristique de Quebec Province, Ministre de la Voire, Quebec, 1932.
10. Roberval, Lake St. John County, Quebec, Map 184A, Geological Survey of Canada, Ottawa, 1916 (not contoured).

PLATES LXVII-LXXV

PLATE LXVII



FIG. 1. Edge of second terrace, just south of Roberval. Note the gullying



FIG. 2. The lower part of the Peribonca River at the village of Peribonca. Swampy Taillon peninsula in background. Boat and lumber barge just arrived from Roberval



FIG. 3. Northwest view from the crest of the Côte St. Prime. Note the line of buildings along the road in the central background

PLATE LXVIII



FIG. 1. Southwest view across the Ashuapmouchouan River to St. Félicien. Upland in background



FIG. 2. The plain and upland east of St. Bruno, along the main road to Chicoutimi



FIG. 1. The lower rapids of the Peribonca River, from the road bridge just west of Honfleur



FIG. 2. The lower Metabetchouan River covered with pulpwood, and the mill at Desbiens

PLATE LXX



FIG. 1. New farm in the sand and swamp country, along the main road west of Dolbeau



FIG. 2. Spruce swamp along the main road between Dolbeau and Albanel



FIG. 3. Tamarack swamp east of Albanel, along the main road

PLATE LXXI



FIG. 1. Newly burned jack-pine plain, just west of Dolbeau along the main road

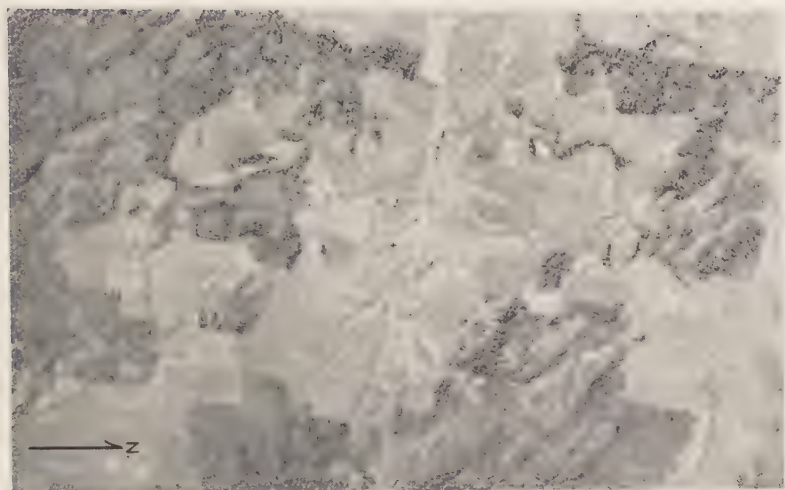


FIG. 2. Settlement along the range-line road just south of Albanel



FIG. 3. View east along the main road (on lot line) to the village of Albanel (on range line)

PLATE LXXII



Photograph by Royal Canadian Air Force

FIG. 1. Vertical air photograph of the rock outcrop area just west of St. Henri de Taillon



Photograph by Royal Canadian Air Force

FIG. 2. Oblique air photograph of the town of Roberval. The wooded area is the Côte St. Prime

PLATE LXXIII



Photograph by Royal Canadian Air Force

FIG. 1. Oblique air photograph of the lowland and upland junction at Ouat-chouan Falls. View south from Val Jalbert. The mill and the village at the base of the falls are abandoned



Photograph by Royal Canadian Air Force

FIG. 2. Oblique air photograph showing St. Gédéon, part of the eastern plain, and the upland. Note the population lines and the strip fields

PLATE LXXIV



Photograph by Royal Canadian Air Force

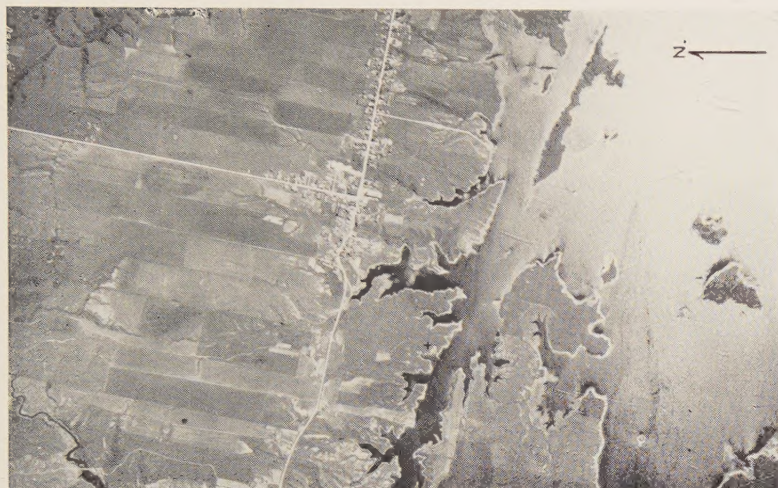
FIG. 1. Oblique air photograph of St. Joseph d'Alma and Riverbend. Petite Décharge in foreground; Grande Décharge in background; pulp mill on outskirts of Riverbend; and power plant in extreme right of background



Photograph by Royal Canadian Air Force

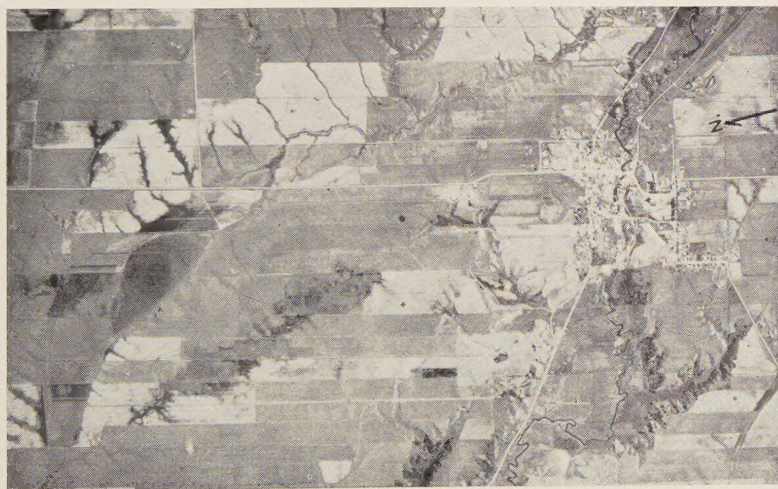
FIG. 2. Vertical air photograph of the village and the vicinity of St. Bruno. Note the strip fields and the settlement along the north-south road (range line)

PLATE LXXV



Photograph by Royal Canadian Air Force

FIG. 1. Vertical air photograph of the village of St. Cœur de Marie.
The water is part of the Grande Décharge



Photograph by Royal Canadian Air Force

FIG. 2. Vertical air photograph of Herbertville and environs

